

TPS706xx 150-mA, 6.5-V, 1- μ A I_Q Voltage Regulators with Enable

1 Features

- Input Voltage Range: 2.7 V to 6.5 V
- Ultralow I_Q : 1 μ A
- Reverse Current Protection
- Low I_{SHDN} : 150 nA
- Supports 200-mA Peak Output
- Low Dropout: 245 mV at 50 mA
- 2% Accuracy Over Temperature
- Available in Fixed-Output Voltages: 1.2 V to 5 V
- Thermal Shutdown and Overcurrent Protection
- Packages: SOT-23-5, WSON-6

2 Applications

- Smartphones and Tablets
- Portable and Battery-Powered Applications
- Camera Modules
- Set-Top Boxes
- Wearables
- Toys
- Medical Equipment

3 Description

The TPS706xx series of linear regulators are ultralow quiescent current devices designed for power-sensitive applications. A precision band-gap and error amplifier provides 2% accuracy over temperature. Quiescent current of only 1 μ A makes these devices ideal solutions for battery-powered, always-on systems that require very little idle-state power dissipation. These devices have thermal-shutdown, current-limit, and reverse-current protections for added safety.

These regulators can be put into shutdown mode by pulling the EN pin low. Shutdown current in this mode goes down to 150 nA, typical.

The TPS706xx series is available in WSON-6 and SOT-23-5 packages.

Device Information⁽¹⁾

DEVICE NAME	PACKAGE	BODY SIZE
TPS706xx	SOT (5)	2.90 mm x 1.60 mm
	WSON (6)	2.00 mm x 2.00 mm

(1) For all available packages, see the orderable addendum at the end of the datasheet.

Typical Application Circuit

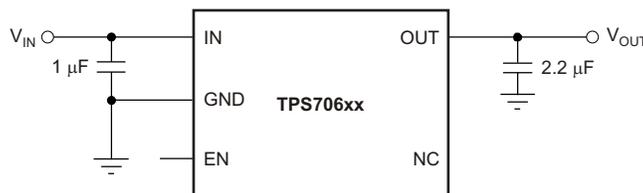


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4 Revision History

DATE	REVISION	NOTES
October 2014	*	Initial release.

PRODUCT PREVIEW

5 Device and Documentation Support

5.1 Device Support

5.1.1 Device Nomenclature

PRODUCT	V _{OUT}
TPS706xxyyyz	XX is the nominal output voltage (for example 18 = 1.8 V). YYY is the package designator Z is the package quantity; R is for reel (3000 pieces), T is for tape (250 pieces)

5.2 Trademarks

All trademarks are the property of their respective owners.

5.3 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

5.4 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
TPS70612DBVR	PREVIEW	SOT-23	DBV	5	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70612DBVT	PREVIEW	SOT-23	DBV	5	250	TBD	Call TI	Call TI	-40 to 125		
TPS70612DRVR	PREVIEW	SON	DRV	6	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70612DRVT	PREVIEW	SON	DRV	6	250	TBD	Call TI	Call TI	-40 to 125		
TPS70615DBVR	PREVIEW	SOT-23	DBV	5	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70615DBVT	PREVIEW	SOT-23	DBV	5	250	TBD	Call TI	Call TI	-40 to 125		
TPS70615DRVR	PREVIEW	SON	DRV	6	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70615DRVT	PREVIEW	SON	DRV	6	250	TBD	Call TI	Call TI	-40 to 125		
TPS70618DBVR	PREVIEW	SOT-23	DBV	5	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70618DBVT	PREVIEW	SOT-23	DBV	5	250	TBD	Call TI	Call TI	-40 to 125		
TPS70618DRVR	PREVIEW	SON	DRV	6	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70618DRVT	PREVIEW	SON	DRV	6	250	TBD	Call TI	Call TI	-40 to 125		
TPS70625DBVR	PREVIEW	SOT-23	DBV	5	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70625DBVT	PREVIEW	SOT-23	DBV	5	250	TBD	Call TI	Call TI	-40 to 125		
TPS70625DRVR	PREVIEW	SON	DRV	6	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70625DRVT	PREVIEW	SON	DRV	6	250	TBD	Call TI	Call TI	-40 to 125		
TPS70630DBVR	PREVIEW	SOT-23	DBV	5	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70630DBVT	PREVIEW	SOT-23	DBV	5	250	TBD	Call TI	Call TI	-40 to 125		
TPS70630DRVR	PREVIEW	SON	DRV	6	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70630DRVT	PREVIEW	SON	DRV	6	250	TBD	Call TI	Call TI	-40 to 125		
TPS70633DBVR	PREVIEW	SOT-23	DBV	5	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70633DBVT	PREVIEW	SOT-23	DBV	5	250	TBD	Call TI	Call TI	-40 to 125		
TPS70633DRVR	PREVIEW	SON	DRV	6	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70633DRVT	PREVIEW	SON	DRV	6	250	TBD	Call TI	Call TI	-40 to 125		
TPS70650DBVR	PREVIEW	SOT-23	DBV	5	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70650DBVT	PREVIEW	SOT-23	DBV	5	250	TBD	Call TI	Call TI	-40 to 125		
TPS70650DRVR	PREVIEW	SON	DRV	6	3000	TBD	Call TI	Call TI	-40 to 125		
TPS70650DRVT	PREVIEW	SON	DRV	6	250	TBD	Call TI	Call TI	-40 to 125		

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

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⁽³⁾ MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

⁽⁴⁾ There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

⁽⁵⁾ Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

⁽⁶⁾ Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

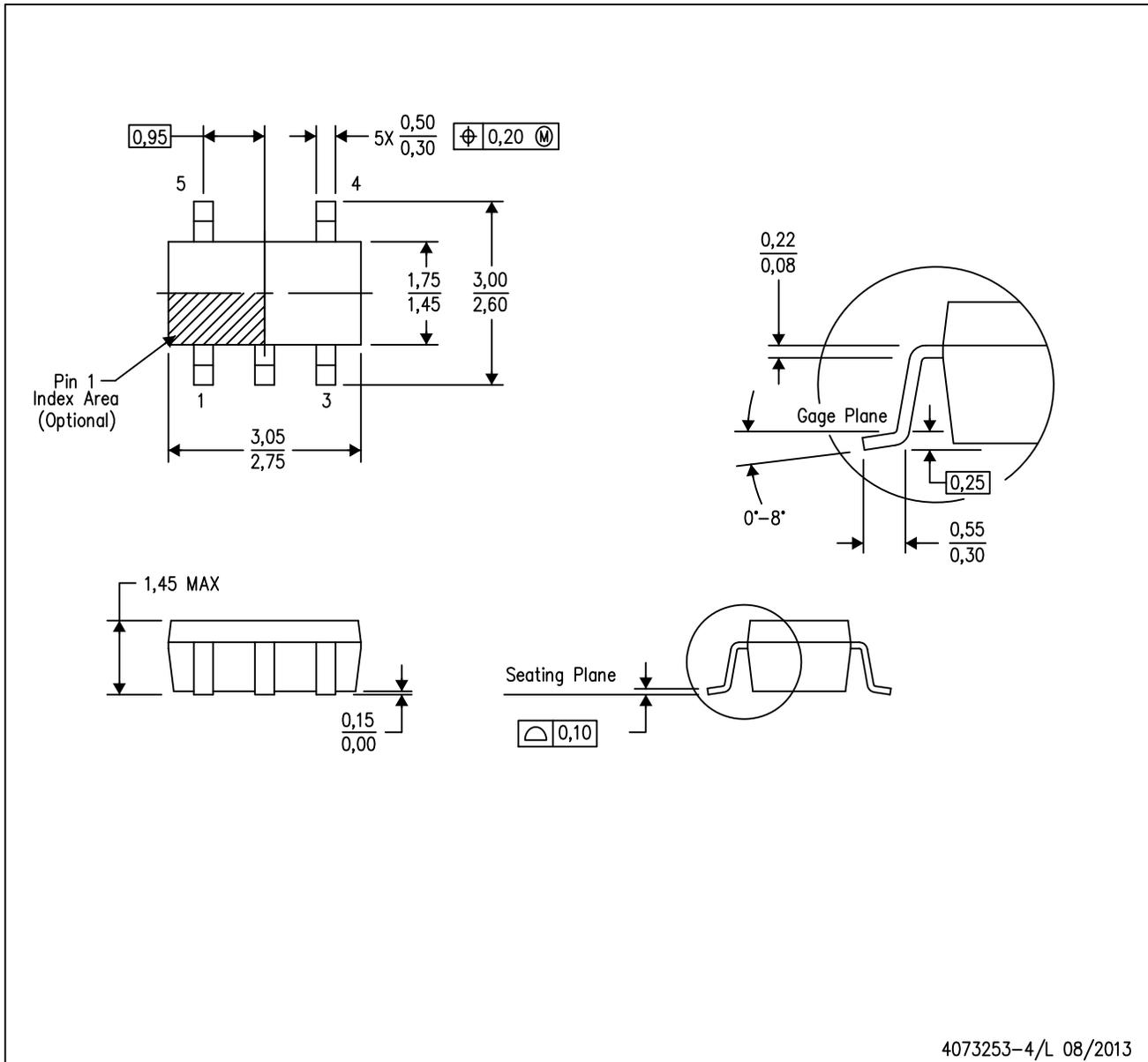
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MECHANICAL DATA

DBV (R-PDSO-G5)

PLASTIC SMALL-OUTLINE PACKAGE

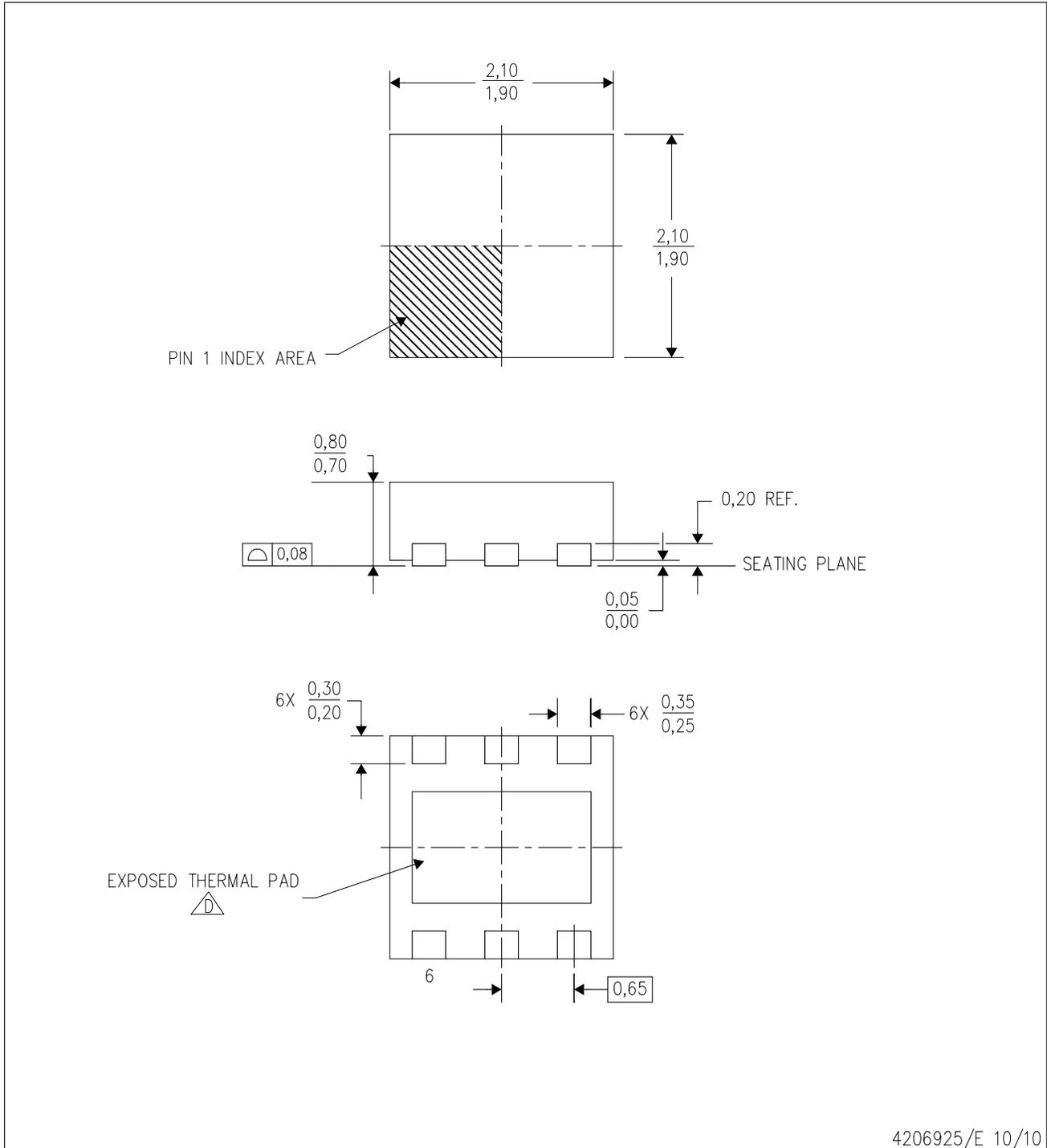


- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion. Mold flash and protrusion shall not exceed 0.15 per side.
 - D. Falls within JEDEC MO-178 Variation AA.

MECHANICAL DATA

DRV (S-PWSON-N6)

PLASTIC SMALL OUTLINE NO-LEAD



4206925/E 10/10

- NOTES:
- All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - This drawing is subject to change without notice.
 - Small Outline No-Lead (SON) package configuration.
- $\triangle D$ The package thermal pad must be soldered to the board for thermal and mechanical performance. See the Product Data Sheet for details regarding the exposed thermal pad dimensions.

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